

19. Define mutation. Explain various mutations with suitable examples.
20. Explain Hardy-Weinberg theory and explain its importance in population genetics.

APRIL/MAY 2025

23UBT21 — GENETICS

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is incomplete dominance? Give an example.
2. Why did Mendel choose pea plants for his study?
3. What is bonding?
4. Define coincidence associated with genetic mapping.
5. Differentiate between structural and regulating genes.
6. Define fusion of bacteria.
7. Name any two chemical mutagens.
8. What is inversion of chromosomes?



9. What is gene frequency? How is it calculated?
10. What is gene mobility? How does it affect the genetic frequency?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Differentiate monohybrid and dihybrid cross with punnett square diagram.

Or

- (b) Explain the concept of multiple alleles along with the concept of blood type heredity in human beings.

12. (a) Why is Morgan's Drosophila test important in understanding bonding?

Or

- (b) Explain crossing over mechanism and its role in gene recombination.

13. (a) Describe the Hershey-Chase experiment and explain how it confirmed that DNA was the genetic material.

Or

- (b) Differentiate between fusion, metamorphosis and transport in bacterial recombination.

14. (a) What is karyotyping? Explain its importance in genetics.

Or

- (b) What is pedigree analysis? Explain its importance in genetics.

15. (a) What is gene flow? How does it contribute to genetic variation in the population?

Or

- (b) What is the role of mutation and natural selection in changing the gene frequency?

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the inheritance of blood groups in man based on multiple alleles and codominance.

17. Explain the process of sex determination in human beings. Explain the basis of chromosomal sex determination.

18. Explain the importance of different types of bacterial recombination and microbial genetics.

